Objective 1:
Progress:
The new multi-purpose molecular methods laboratorian was hired on 2/13/2011, and has begun enhancing capacity across several laboratories. Currently, she is validating the measles PCR assay by using samples from a recent measles outbreak investigation. Implementation of the influenza pyrosequencing protocols, which will be a significantly larger project, has been delayed due efforts associated with the measles outbreak response. Additional guidance from the CDC's Influenza Branch in validating these assays would be helpful in expediting completion of this objective. The new laboratorian will also attend a CaliciNet training in May 2011 in anticipation of implementing norovirus PCR testing and sequencing as a third project. Two BioNumerics licenses (version 6.1) have been purchased through another grant source for use by the Molecular Diagnostics Laboratory for CaliciNet participation.

Performance measures:

- ELISpot training at CDC is completed by 12/31/2010.
  - *CDC trainings for the Mumps ELISpot assay and PCR protocols are scheduled to occur before July 2011.*
- Staff are trained on pyrosequencing and new PCR assays by 7/31/2011 (laboratory methods for which staff are proficient will increase by 4).
  - *Development of pyrosequencing for influenza resistance testing is underway. The instrument is set up and ready for use. A review of all of the influenza methods provided by CDC/APHL for antiviral resistance testing will be performed; and an algorithm for implementation for the next influenza season will be prepared. Validations of the measles and mumps PCR assays are underway.*
- Beginning 8/1/2011, all suitable specimens submitted for measles, mumps or rubella testing will be tested by PCR. Results will be produced for at least 85% of suitable specimens within 2 business days.
  - *The CDC RT-PCR method for measles and mumps have been optimized for the ABI7500 fast Dx platform. Validation of the new assay for measles RT-PCR detection is in progress.*
  - *SOPs and a validation plan are currently being written by the new Bacteriologist III for measles and mumps RT-PCR detection.*
  - *A literature/ SME review of rubella RT-PCR options is ongoing. CDC currently prefers nested PCR.*
- One staff will attend the Molecular Virology Workshop held by the Pan American Society for Clinical Virology by May 7, 2011.
  - *Travel was not funded.*
- Two staff will attend the 27th Clinical Virology Symposium held by the Pan American Society for Clinical Virology by May 11, 2011.
  - *Travel was not funded.*

Objective 2:
Progress:

ELC funds allowed for the hire of a new entry-level bacteriologist in the foodborne disease surveillance laboratories on January 3, 2011. This hire has improved turnaround times for enterics laboratory testing, and has allowed other laboratorians to spend more time focusing on development of new assays (specifically, Luminex bead array for Salmonella serotyping, immunomagnetic bead separation for STEC, and MLVA). Unfortunately, her contributions are offset by the disruption caused by recent laboratory staff turnover at all levels, and by a current hiring freeze associated with cuts in state funding. A BioRad CHEF Mapper® was purchased in mid-December 2010, replacing a malfunctioning older unit.

Performance measures:

- Beginning in 12/15/10, 100% STEC, 80% *Listeria,* and 95% *Salmonella* PFGE patterns are uploaded to PulseNet within four days of receipt of the isolate to the PFGE lab. Currently, 93% of STEC, ~63% of *Listeria*, ~88% of *Salmonella* are uploaded within 4 days.
  - *For specimens received in the PFGE lab between 12/15/2010 - 02/15/2011, 100% STEC, 66% Listeria, and 77% Salmonella PFGE patterns are uploaded to PulseNet within four days of receipt of the isolate to the PFGE lab. Inability to meet all TAT goals was likely due to turnover at all levels of laboratory staffing, and temporary staffing vacancies. TATs will likely decrease in the coming months now that staffing has stabilized.*
- Beginning 12/15/10, *Salmonella* serotyping data are available for at least 50% of isolates within 7 days of receipt of isolate (currently 14% are serotyped within 7 days, 50% within 21 days).
  - *For specimens received for salmonella serotyping between 1/1/11 – 2/28/11, results were available for 38% of isolates within 7 days (up from 14%), and for 76% of isolates within 21 days (up from 50% within 21 days).*

***Objective 3*:**
The MA DPH continues to successfully integrate epidemiology, lab, and health information systems components within the health department and within the Northeast region. The groups collaborate to share relevant information between all Working Group on Foodborne Illness (WGFBI) members in real-time, and to work together to ensure prompt collection and submission of suspect foods to the laboratory.

Performance measures:

- Lab staff will collaborate with public health epidemiologists to respond to at least 5 acute public health threats by 07/31/2011.
  - *Between 9/30/10 and 02/28/11, lab staff collaborated with public health epidemiologists to respond to at least 8 MA foodborne disease outbreaks.*
- Lab staff will present at the 2010 Northeast Epidemiology Conference by 11/05/2010.
  - *Lab staff presented at the 2010 Northeast Epidemiology Conference on 11/05/2010.*

Lab IT Programmatic Progress:

BLS has completed the electronic laboratory reporting (ELR) interfacing for the viral serology and reference bacteriology laboratory information systems (LIMS), which will allow providers to electronically view test orders and receive and print test results. The interfacing uses Rhapsody

IDE to exchange data with ELR and send results electronically to the MA Bureau of Infectious Disease. Additional Rhapsody comm points will be purchased to support this interfacing. BLS has also completed the detailed system requirements for the reference bacteriology and viral serology LIMS components. Code development has begun on the reference bacteriology electronic workcard and verification functions. The detailed requirements have been gathered for the viral serology component and will be reviewed and finalized with the viral serology staff.

Although we are successfully achieving our targeted performance measures, we are faced with an obstacle in terms of filling the Interoperability Manager position funded by the grant. Massachusetts continues to see significant decreases in tax receipts. In an effort to achieve cost savings, Massachusetts is in the process of consolidating IT services at the secretariat level. This consolidation effort has resulted in freezing of all new IT staff positions. Because of the critical need to perform the position functions, funding will be redirected to hire an IT contractor in this role until the hiring freeze is lifted.

Performance measures:

- By 7/31/11, influenza data will be able to be actively sent to the CDC in the PHLIP standard message format using PHINMS
  - *MDPH is actively sending influenza data in real time in the PHLIP standard message format to the CDC using PHINMS.*
- By 7/31/11, the remaining LIMS reference and viral serology LIMS components will be implemented and deployed into the SLIS system. Implementation will include ELR (HL7) interfacing and reporting to the BID MAVEN disease surveillance system.
  - *MDPH completed gathering the detailed system requirements and database design for the development of the IML Reference and BtB Serology LIMS components. Coding will take place shortly on the order entry, verification, workcard/worksheet and verification screens.*